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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/831,745
Filing Date: September 20, 2001
Appellant(s): BIRKNER ET AL.

James A. LeBarre
Registration No. 28,632
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/24/06 appealing from the Office action mailed 2/15/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,005,942	CHAN ET AL.	12-1999
5,473,690	GRIMONPREZ ET AL.	12-1995

5,301,100 WAGNER 4-1994

Silberschatz et al., Database System Concepts, 3rd Edition, The McGraw-Hill Company, Inc. (March 1, 1998) Chapter 2 "Entity-Relationship Model", Chapter 3 "Relational Model," pgs. 23-110.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 1, 7, 10-17 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Chan et al. USPN 6,005,942. (hereinafter Chan)

As per claim 1, Chan discloses a device for controlling the life cycle of a portable electronic object, the life cycle being determined by a succession of state transitions, the states determining the services offered by the object, the object comprising a processing unit, a volatile memory, program memories and data memories, each of the memories having a content defining a plurality of configurations (fig. 1 and figs. 3A and 3B; col. 13:35-14:23), wherein the device comprises means for controlling the transition from a first state to a second state of the portable electronic object, including means for selectively enabling and/or inhibiting state transitions, and means for checking the content of the volatile memory, the data memories and the program memories of the portable electronic object as a function of the state transition to be effected, so that only

some transitions are permitted amongst all the transitions between any two possible states of the portable electronic object. (figs. 4-6, 7A, 7B, 9 and 10; col. 12:43-67)

As per claim 7, the rejection of claim 1 under 35 U.S.C. 102(e) is incorporated herein. (supra) In addition, the control means comprise means for triggering actions during the processing of a request for transition crossover from a first state to a second state of the portable electronic object. (col. 12:46-50)

As per claim 10, it is a claim corresponding to claim 1 and it does not teach or define above the information claimed in claim 1. Therefore, claim 10 is rejected as being anticipated by Chan for the same reasons set forth in the rejections of claim 1.

As per claim 11, the rejection of claim 1 under 25 U.S.C. 102(e) is incorporated herein. (supra) In addition, the device is a smart card. (col. 3:22-45)

As per claim 12, Chan discloses a method of controlling the life cycle of a portable electronic object, the life cycle being determined by a succession of state transitions, the states determining the services offered by the object, the object comprising a processing unit, a volatile memory, program memories and data memories, each of the memories having a content defining a plurality of configurations, (fig. 1 and figs. 3A and 3B; col. 13:35-14:23) the method being implemented, within the object, following a request to transition from a current state to a new state, according to

the following steps: a step of validation of the enabling of the request using means for enabling and/or inhibiting state transitions, so that only certain transitions are permitted amongst all the transitions between any two possible states of the object; a step of evaluating checks on the configuration of the object that are associated with a permitted transition; and a step of changing to the new state of the object if the requested transition is enabled and if the checks on the configuration of the object are satisfied. (figs. 7A and 7B, col. 12:43-67; 16:16-29; 17:15-45: Card Domain validates and modifies the current state)

The aforementioned cover the limitations of claim 12.

As per claim 13, the rejection of claim 12 under 35 U.S.C. 102(e) is incorporated herein. (supra) In addition, the method comprises a step of executing systematic actions associated with the requested transition (col. 12:66-67).

As per claims 15 and 17, the rejection of claim 12 under 35 U.S.C. 102(e) is incorporated herein. (supra) In addition, the method further comprises executing positive actions performed if the requested transition is permitted and if the checks associated with the requested transition are satisfied (the actions taken by the Card Domain are positive actions).

As per claim 16, the rejection of claim 12 under 35 U.S.C. 102(e) is incorporated herein. (supra) In addition, the method further comprises executing negative actions if

the checks associated with the requested transition are not satisfied (col. 16:63-64: an example of a negative action when a condition is not verified).

As per claim 36, the rejection of claim 12 under 35 U.S.C. 102(e) is incorporated herein. (supra) In addition, the method does not enable the crossover of a state transition, from an additive state to a reference state since all the defined states are reference states.

Claim Rejections - 35 USC § 103

Claims 3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Wagner USPN 5,301,100. (hereinafter Wagner)

As per claim 3, the rejection of claim 1 under 35 U.S.C. 102(e) is incorporated herein. (supra) Chan discloses several permitted state transitions, (Chan, figs. 7A, 7B and 8) but Chan does not disclose using a table of permitted state transitions. However, transition tables are well-known constructs in the art to categorize possible transitions between states; for example, Wagner discloses a table of permitted state transitions, which describes the transitions and actions for each state. (Wagner, fig. 8A) It would be obvious to one of ordinary skill in the art at the time the invention was made to use a table of permitted state transitions since it is desirous to define and identify the possible actions of a finite state system in a simple data structure as known to one of ordinary skill in the art. The aforementioned cover the limitations of claim 3.

As per claim 18, it is a claim corresponding to claims 3 and 12, and it does not teach or define above the information claimed in claims 3 and 12. Therefore, claim 18 is rejected as being unpatentable over Chan in view of Wagner for the same reasons set forth in the rejections of claims 3 and 12.

Claims 4-6, 8 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Wagner and further in view of Silberschatz et al. Database System Concepts, Chapter 2, "Entity-Relationship Model" and Chapter 3, "Relational Model." (hereinafter Silberschatz)

As per claims 4-6 and 8, the rejections of claims 3 and 7 under 35 U.S.C. 103(a) are incorporated herein. (supra) In addition, Chan discloses checks made for a state transition and actions taken; moreover, Wagner discloses a state transition table wherein for a given transition, a set of conditions (checks) are verified, and if valid then a set of actions are actuated. Although, neither Chan nor Wagner suggest a table for checks and a table for actions, this arrangement is a trivial permutation based on a standard entity-relationship data model as taught by Silberschatz: entity sets describe certain objects in the abstract universe and relationship sets describe associations among several entities. (Silberschatz, pgs. 23-28, sections 2.1.1-2.1.2) In the case of the state transition table of Wagner, conditions to be checked and actions that are triggered are objects within a finite state system and would each be trivially separated

into its own table. (Silberschatz, pgs. 65-69, section 3.1.2) Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made for the device to use a table of checks to be made per permitted state transition and a table of actions that are triggered during the processing of a request for transition crossover, since it is desirous to establish a relational organization for better coherency of the transition relations between states as known to one of ordinary skill in the art. Moreover, extensions to each table are desirable features to expand the relations of a given table; this enables more flexibility within the schema by establishing more complex characterizations to each entity. Finally, a check engine is a necessary component for a device to utilize the tables comprising the state transition schema. The aforementioned cover the limitations of claims 4-6 and 8.

As per claim 19, the rejections of claims 4-8 and 18 under 35 U.S.C. 103(a) are incorporated herein. (supra) In addition, the method includes the steps of: using an entry corresponding to the requested transition, in a table of actions, and executing a program of actions defined by the entry. (Wagner, fig. 8A; col. 11:1-33)

As per claim 20, the rejections of claims 4-8 and 18 under 35 U.S.C. 103(a) are incorporated herein. (supra) In addition, the method includes the steps of: using an entry in a table of checks, and executing a program of checks defined by the entry. (Wagner, fig. 8A; col. 11:1-33; Silberschatz, pgs. 65-69, section 3.1.2)

As per claims 21 and 23, the rejections of claims 4-8 and 18 under 35 U.S.C. 103(a) are incorporated herein. (supra) In addition, the method includes the step of executing positive actions, if the requested transition is enabled and if the checks associated with the requested transition are satisfied, comprising the steps of: using an entry, corresponding to the requested transition, in a table of actions, and executing a program of actions defined by the entry. (Wagner, fig. 8A; col. 11:1-33; Silberschatz, pgs. 65-69, section 3.1.2; Chan, figs. 7A and 7B, col. 12:43-67; 16:16-29; 17:15-45: the actions taken by the Card Domain are positive actions)

As per claim 22, the rejections of claims 4-8 and 18 under 35 U.S.C. 103(a) are incorporated herein. (supra) In addition, the method includes the step of executing negative actions if the checks associated with the requested transition are not satisfied, comprising the steps of: using an entry, corresponding to the requested transition, in the table of actions, and executing a program of actions defined by the entry. (Wagner, fig. 8A; col. 11:1-33; Silberschatz, pgs. 65-69; Chen, col. 16:63-64)

Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Grimonprez et al. USPN 5,473,690. (hereinafter Grimonprez)

As per claim 37, the rejection of claim 1 under 35 USC 102(e) is incorporated herein. (supra) Chan does not disclose the checking means determines whether the memories contain data that is invalid for the transition to be effected. Grimonprez

discloses a secure method for altering the state of a smart card using a chart of applications and a chart of data tables, wherein the method includes an initial step to record applications on to the card using an instruction (CREATE APPLICTION); success of this instruction being carried out is dependent on the state of an EEPROMS type memory: if the (CLOSE) instruction is previously launched, then the (CREATE APPLICTION) is invalidated by switching the value of the EEPROMS type memory. (col. 8:47-64) Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Grimonprez with the method of Chan such that the checking means determines whether the memories contain data that is invalid for the transition to be effected. One of ordinary skill in the art would be motivated to do so to ensure that only proper state changes of the smart card are allowed. (Grimonprez, ibid) The aforementioned cover the limitations of claim 37.

As per claim 38, the rejection of claim 12 under 35 USC 102(e) is incorporated herein. (supra) Chan does not expressly disclose the evaluation step comprises checking whether the memories have a predetermined configuration associated with the transition from the current state to the new state. Grimonprez discloses a secure method for altering the state of a smart card using a chart of applications and a chart of data tables, wherein the method includes an initial step to record applications on to the card using an instruction (CREATE APPLICTION); success of this instruction being carried out is dependent on the state of an EEPROMS type memory: if the (CLOSE) instruction is previously launched, then the (CREATE APPLICTION) is invalidated by

switching the value of the EEPROMS type memory. (col. 8:47-64) Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Grimonprez with the method of Chan such that the evaluation step comprises checking whether the memories have a predetermined configuration associated with the transition from the current state to the new state. One of ordinary skill in the art would be motivated to do so to ensure that only proper state changes of the smart card are allowed. (Grimonprez, ibid) The aforementioned cover the limitations of claim 38.

(10) Response to Argument

On pgs. 7-8 of the Appeal Brief, Appellant argues that Chen does not disclose "means for checking the content of the volatile memory, the data memories and the program memories of the portable electronic object as a function of the state transition to be effected" as recited in claim 1. (Brief, pg. 7, 1st paragraph) In determining the equivalents of a means for limitation, the following must be shown: (A) the prior art element performs the function specified in the claim; (B) the prior art element is not excluded by any explicit definition provided in the specification for an equivalent, and (C) the prior art element is an equivalent of the means plus function limitation; further, a showing that "the prior art element performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification" is sufficient to support a conclusion that the prior art element is an equivalent. (MPEP 2183)

With respect to these requirements, the function specified in the aforementioned means for limitation of claim 1 is as follows: "checking the content of the volatile memory, the data memories and the program memories of the portable electronic object as a function of the state transition to be effected, so that only some transitions are permitted amongst all the transitions between any two possible states of the portable electronic object." The means for checking the content of the volatile memory, the data memories and the program memories of the portable electronic object are described on pgs. 9-10 of the Specification; in particular, the Specification defines a program stored in the program memory to identify possible states to gain access from the current states and possible actions to be performed with each possible state transition; data stored in data memory that identifies the current state of the portable electronic object; and calculations temporarily stored in volatile memory as a result of data processing.

With respect to the first prong to show prior art equivalents of the means for limitation, the Chen prior art performs the function specified in claim 1. Chen discloses a method for securely transitioning from one state to another state in a multi-application smart card using a Card Domain and Security Domain applets to manage the transitions. The Card Domain is the entity on the card that is responsible for the life cycle state management, and moreover, the transitions from one life cycle state to another are restricted to ensure that only a next state with a higher level of security is allowed. Col. 11:66-12:11; 12:57-67. Such states include, inter alia, initializing the smart card, loading applications onto the smart card, and blocking the card from further use when a breach of security is detected. (figs. 7A-9) The initialization of the smart

card requires a secret initialization key by the smart card manufacturer to install and register the Card Domain and Security Domains (col. 12:25-34); the secure loading of applications entails post-issuance validation and installation of applications onto the smart card using cryptographic signatures and encryption techniques (col. 10:53-11:64; 16:16-17:5); and a blocked state effectively deactivates the use of the smart card from further attempted transactions for any of the applications of the card (col. 14:24-60). Chen further discloses that the lifecycle of the card is determined by the contents of the card memory, including ROM and EEPROM, which store the Card Domain, Security Domains, applications, secret keys, and state information; and RAM, which store the calculations performed by the programs stored in the persistent memory. (Col. 13:35-60) For these reasons, the invention of Chen performs the function specified in the claim.

With respect to the second prong, Appellant's specification does not provide any explicit definition that excludes the prior art element as an equivalent.

Finally, with respect to the third prong, the invention of Chen performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification. As iterated above, Chen discloses that the Card Domain, Security Domain and corresponding state elements to effectuate secure transitions between one state to another are stored in the card memory, which includes persistent, non-mutable memory (ROM); persistent mutable memory (EEPROM); and non-persistent mutable memory (RAM). (See Chen, col. 13:35-14:23) These features corresponds with Appellant's specification which

defines the check engine as stored in program memory (ROM); the state information stored in data memory (EEPROM); and calculations by the check engine temporarily stored in volatile memory (RAM). (See Specification, pgs. 9-10 and fig. 1). Furthermore, Chen discloses that the Card Domain manages life cycle state transitions (col. 12:10-11), wherein a state transition can only occur to a next state with a higher level of security based on security policies (col. 12:57-67), and wherein such states includes an initialization state, a secure load state, and a block state (Col. 12:11-42; figs. 6-9), which corresponds to the limitation wherein the check is made as a function of the state transition to be effected, so that only some transitions are permitted amongst all the transitions between any two possible states of the portable electronic object. Hence, the features of Chen's invention perform the functions substantial similar to the functions of the check engine as described in Appellant's Specification. Therefore, it was determined that the invention of Chen is an equivalent to the means for limitation of "checking the content of the volatile memory, the data memories and the program memories of the portable electronic object as a function of the state transition to be effected."

With respect to Appellant's argument that the Chen prior art merely discloses a mechanism for loading an application on a card, and hence does not disclose the limitation of claim 12 of evaluating checks on the configuration of the smart card, particularly checks that are associated with a permitted transitions (Brief, pg. 9), Appellant fails to distinguish the checks disclosed by Chen for loading an application on

the card from checks on the configuration of the smart card as recited in the claims. In fact, the Chen invention requires checks on the configuration of the smart card to initiate a secure load for an application. Such checks include, inter alia, whether or not the card is in blocked state. (col. 14:24-60) In addition, Chen also discloses that the smart card life cycle is designed such that the cycle can only ratchet forward to a next state in the life cycle with a higher level of security based on security policies, wherein the Card Domain manages the state transitions in the card life cycle. (Col. 12:12-42 and lines 43-67) Hence, contrary to Appellant's allegations, Chen discloses the step of evaluating checks on the configuration of the smart card, specifically checks that are associated with a permitted transition.

Finally, Appellant argues on pgs. 10-12 of the Brief, that the combination of the Silberschatz prior art with the Chen prior art is improper because there is no relationship between the teachings of Chen and Silberschatz. It is noted that Applicant's argument ignores the discussion of the Wagner patent. As outlined in the final rejection mailed on 2/15/07, Chen defines checks and actions to be taken corresponding to a state transition. (paragraph 25) In addition, the claim rejection indicates that the use of a transition table to define applicable transitions between specific states is a well-known construct in the art at the time of invention, and provides the Wager disclosure as an example of an invention that incorporates a state transition table including possible transitions and actions for each state. (paragraph 22) Furthermore, the Silberschatz disclosure provides a general teaching of establishing a schema for a database. The

core teaching distilled from the Silberschatz art is the use of a plurality of tables to devise an organization based on the relationship of the entity sets, and to provide extensions based on these relationships (pgs. 23-28 and 65-69); this teaching boils down to a simple idea: rather than relying on one table to contain all relevant data, the use of multiple tables provides for a more manageable and coherent organization of data. It would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the Silberschatz with the teachings of Chen and Wager such that the table of checks and actions as disclosed by Chen and Wager is modified to a table of checks and a table of actions, as well as further extensions, since it provides a more coherent organization of the data as known to one of ordinary skill in the art. Hence, the Silberschatz prior art as applied to the invention of Chen and Wagner suggest a table for checks and a table for actions, as well as extensions to these tables.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

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